KLM 420-450-18C

00772

The 18C is a multi-purpose antenna designed for all modes of transmission from 420 to 450 MHz. Circular polarity is employed and generated in this antenna using crossed yagis spaced 90° apart along the boom and fed in phase. An optional switch (CS-2) added to the antenna allows remote selection of either right hand or left hand circularity from the operating position. The CS-2 has a built-in matching transformer which eliminates the need for any power divider/matching unit.

Except under direct line of sight, short range conditions, circular polirity offers reduced fading, reduction of multipath distortion, and sometimes greater signal to noise ratios than conventional linearly polarized systems. These features should particularly benefit the OSCAR satelite user, the ATVer, the FMer and the SSB/CW DXer.

SPECIFICATIONS: KLM 420-450-18C
Circular-Polarized Antenna

Frequency of Operation: 420-450 MHz

Number of Elements: 18

Gain: 12 dBdc

F/B: 20 dB

VSWR: 1.5:1 max.

Ellipticity: 1 dB @ 430-440, 3 dB max @ 420-450 MHz.

Beamwidth: 22 Degrees

Feed Impedance: 50 ohms, unbalanced

Baluns: Two 4:1 coax supplied

Boom Length/Dia: 88" x 1"O.D.

Mounting: Center or rear, 1½" mast

Weight: 3 lbs.

Windload: .5 Square Feet

Options: CS-2 Circularity Switcher, left-hand/right hand switch, boom mounted, keyed @ shack, 12-14 VDC @ .1 Amp.

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PARTS LIST

(2)

KLM 420-450-18C

DESCRIPTION	QTY.	DESCRIPTION	QTY.
3/8 x 1 x 2-3/4 Type II Driven Insulator	2	1" x .058 x 64" Boom Section	1
8-32 x 1-3/4 Stainless Steel Screws	2	1" x .058 x 28" Boom Section	1
8-32 x 1¼ S.S. Screws	2	11¼" x 3/16 Rod and Insulator	8
8-32 S.S. Nuts	6	11-3/8" x 3/16 Rod and Insulator	2
#8 S.S. Split Ring Lockwashers	6	11½" x 3/16 Rod and Insulator	2
6-32 x 1 S.S. Screws	4	11-3/4" x 3/16 Rod and Insulator	2
6-32 S.S. Nuts	8	13¼" x 3/16 Rod and Insulator	2
#6 Split Ring Lockwashers	8	Folded Dipoles	2
Gold 1½" U-bolts & Saddles	2	Baluns, Prefab - coax 4:1	2
¼-20 S.S. Nuts	4	3-3/16 x 3-3/16 x 1/8 Mounting Plate	1
¼ S.S. Split Ring Lockwashers	4	Insertion Tool	1
Nylon Ties - Black	6	Instructions	1
Reinforcing Inserts (Peanuts)	4	Boom Caps	2
#8 S.S. Flat Washer	4		

ANTENNA ASSEMBLY

I. BEFORE YOU BEGIN.....

1. Select an assembly area large enough to comfortably accomodate overall antenna dimensions. A shallow box is handy for holding and sorting the smaller hardware, as is a marking pen for identifying components.

2. Some simple tools are required: A tape measure, screwdriver, and a set of spin-tite, socket or end wrenches. Common nut sizes are:

5/16" ..... 6-32 hdwe	7/16" ..... ¼-20 hdwe
11/32"..... 8-32 hdwe	1/2"..... 5/16-18 hdwe

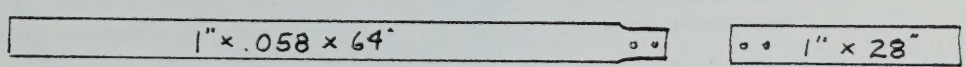
To avoid damage to antenna components, be aware that most hardware need only be moderately hand tightened with screwdriver or spintite to be secure. When using tools with mechanical leverage, such as socket or end wrenches, care must be taken not to over-torque nuts and damage components.

3. Thoroughly unpack shipping box and check components and hardware against the Parts List. If there is a difference, look for a "Factory Update/Change" sheet accompanying the assembly instructions prior to contacting your KLM dealer or the factory.

4. For the best results, use the pictorials to identify the various antenna components before you begin assembly.

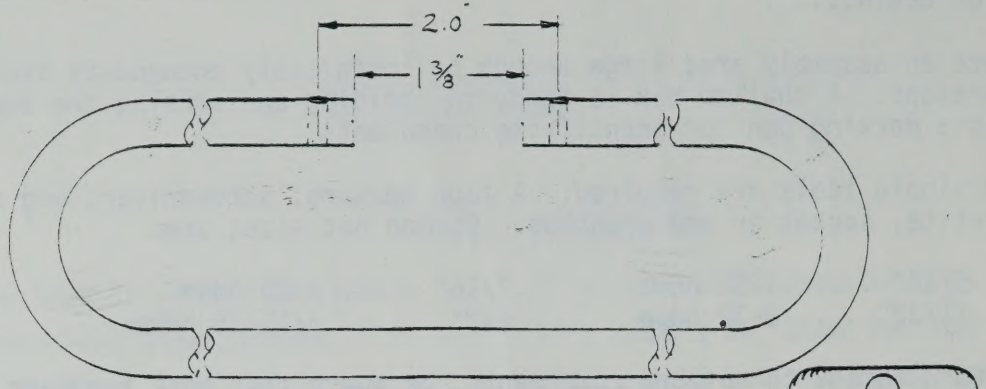
II. BOOM ASSEMBLY: (Multiple sections only)

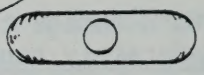
1. The end of each boom section to be assembled is letter-marked in felt pen. Assemble boom sections matching like letters ("A" to "A", etc.) and aligning screw holes. Each joint requires two sets of 8-32 x 1¼" screws, nuts, and lockwashers. Tighten nuts securely. Section placement and length will follow the sketch below:



NOTE: On some models, a boom assembly screw hole may also be used as an insulator mounting hole. Hardware is easily exchanged later during element mounting.

III. DRIVEN ELEMENT ASSEMBLY (Folded Dipole)





LINEAR REINFORCING INSERT

— 1. Select a folded dipole and insert the reforcing inserts (peanut) into the end of the dipole

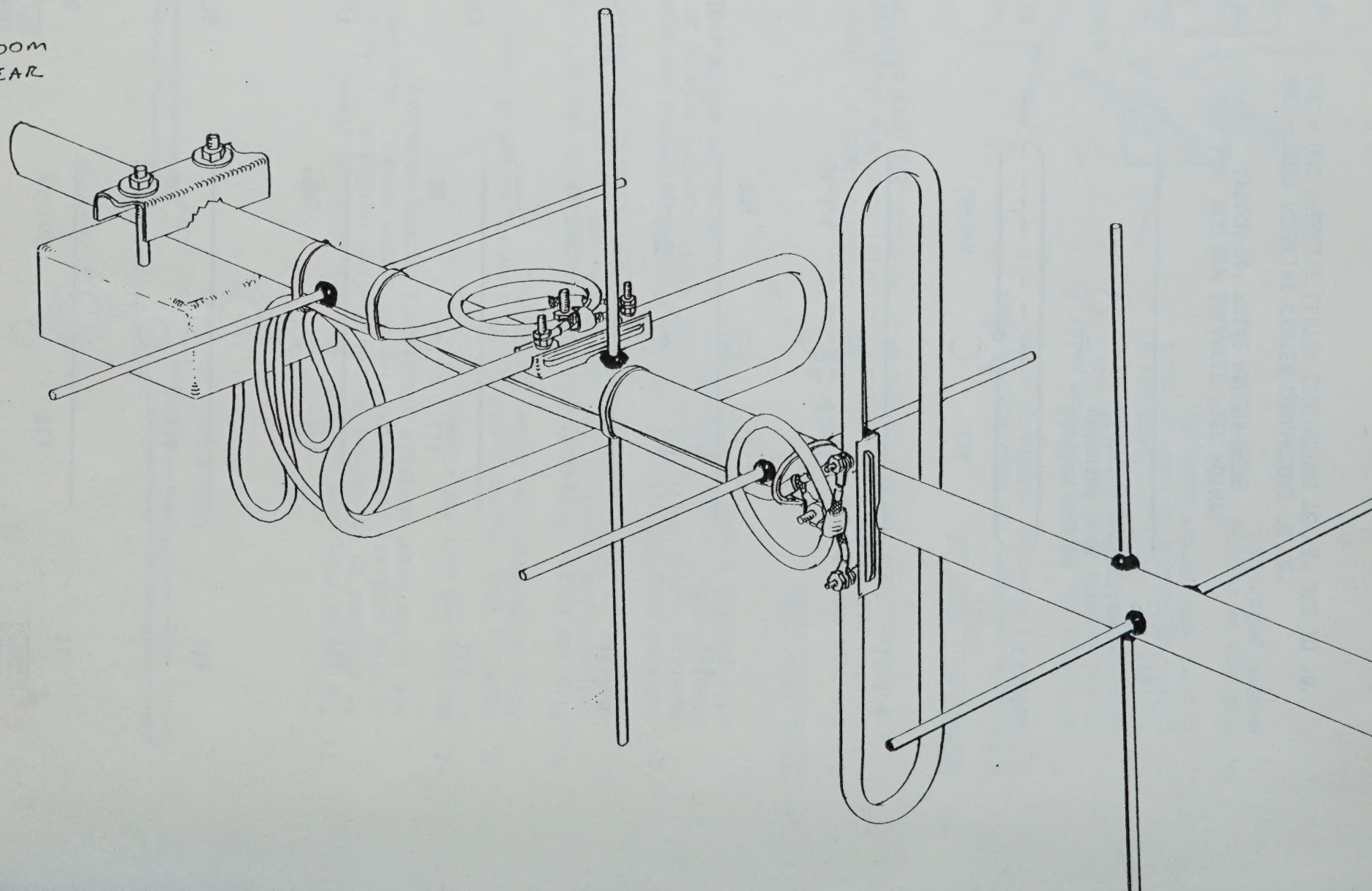
— 2. Mount the dipole to an insulator using the 6-32 x 1 screws, nuts, and lock-washers and tighten.

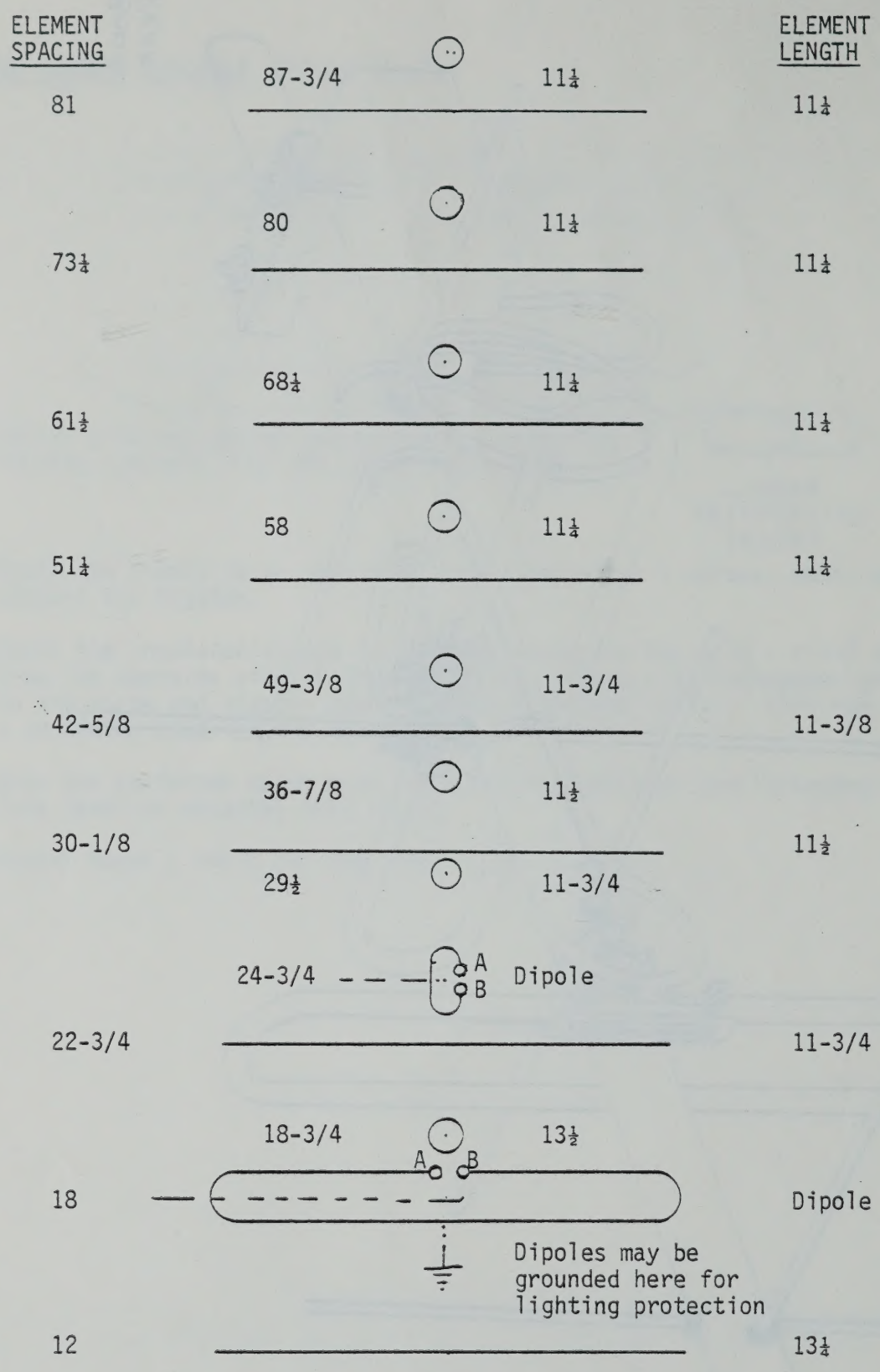
— 3. Mount the insulator/dipole on the boom inserting the 8-32 x 1-3/4 screw from the opposite side of the boom first. Place a #8 lockwasher and nut on the screw and tighten down into the insulator cavity. This now forms a grounding stud for the balun.

— 4. Drop the performed balun over the studs and add nuts and lockwashers loosely (the feedline attaches here later).

— 5. Repeat Steps 3 and 4 for the other dipole assembly.

(5) BOOM REAR

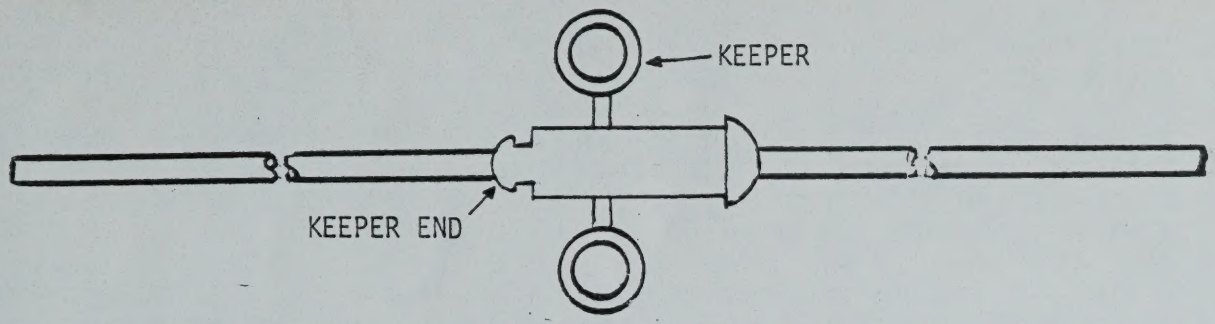




A-B 200 OHM BALANCED FEED POINTS
ATTACH 9½" RG142 BALUNS HERE

RHC = BOTH FEEDLINE CENTER CONDUCTORS TO "A"
LHC = ONE FEEDLINE CENTER CONDUCTORS TO "A" ONE TO "B"

IV. DIRECTOR/REFLECTOR MOUNTING (Parasitic Elements)



1. Two keeper rings are supplied with each parasitic element. They should still be attached to the molded on polyethelene insulator. Using a sharp knife or side cutters, remove the ring and excess sprews. Save one set for future use in the event multiple disassembly becomes necessary.

2. Measure and sort the elements by size.

3. Starting with the Reflector (13¼") element, insert it through the correct hole in the boom (see Dimension Sheet).

4. Slip the keeper ring over the element end with the groove in the insulator and using the insertion tool provided in the kit, press the ring on until it seats in the groove and the element cannot easily be pulled out.

5. Continue this process until all the parasitic elements are mounted carefully; checking length and location of each element before pushing on the keeper. Should removal become necessary, a sharp rap on the keeper end of the element will pop the keeper ring back off.

V. FINAL INSPECTION

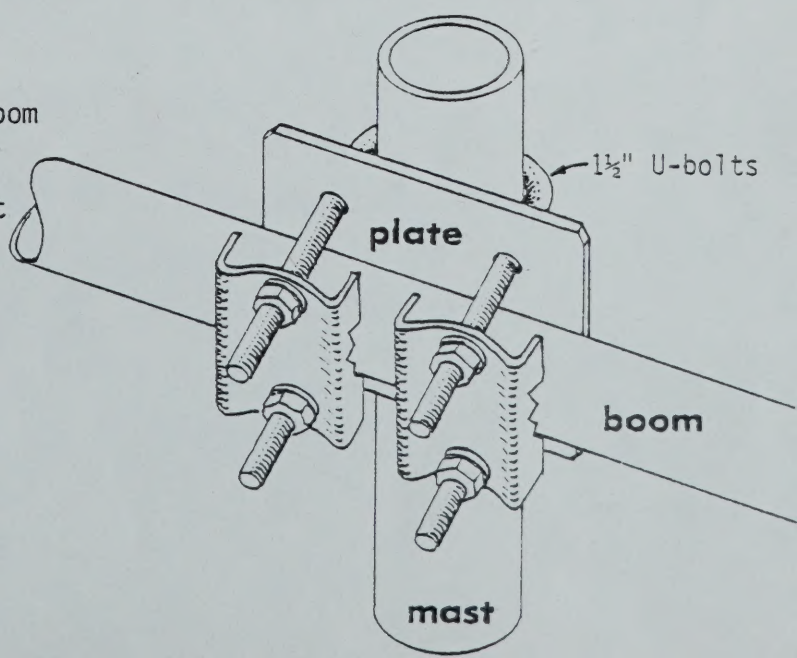
1. Use tape measure and Dimension Sheet to double check all elements for correct spacing and length. Use Assembly Pictorial to double check correct placement of straps, loop, balun, screws, etc. Re-check all nuts and screws for tightness.

VI. BOOM-TO-MAST MOUNTING

Hardware arrangement for mounting the boom to the mast is shown in drawing at right.

1. Determine the physical balance point of the antenna with the feed coax attached. Center the mounting hardware at this point. A fiberglass or other non-conductive material must be used when center mounting.

2. Boom may be rotated for desired antenna polarity.



3. The 18C may also be rear-mounted on a metal mast.

4. Regardless of mounting, the feedline(s) must be run off the rear of the boom to eliminate any chance of disturbing the excellent circularity of the 18C.

   Use high quality coax for your feedline and eliminate the possible source of losses, mismatches, and distorted patterns. We recommend the shortest possible run of Times wire and cable #FM-8 or Belden 8214. Better still is any brand of 1/2" or larger 50 ohm hardline.

5. If the CS-2 switch/matching unit is used, coax from the CS-2 to the individual feed points is provided. The CS-2 has a UG-58 "N" type female input/output connector for direct 50 ohm hook-up to the main feedline. Use the balck nylon ties provided to secure feedlines close to the boom.

6. If your antenna needs DO NOT call for the flexibility of switching from RH to LH circular but you still need circular polarization, two short equal lengths of 50 ohm coax from the feed points to a KLM 420-470-2N power divider will suffice. Again, use the black nylon ties to keep the feedline tight and flat against the boom.

7. A third alternative is to simply run two separate 50 ohm feedlines from the 18C to the operating position. Use the black nylon ties to keep the feedlines tight and flat against the boom.